

ABSTRACT OF THE DISCLOSURE

5 A system for manipulating optical signals in an optical switch
 utilizes a piezoelectric membrane. The membrane is selectively enabled to
 switch among an outward position, an inward position and a relaxed orienta-
 tion in relation to a sidewall of a trench that is provided as part of the switch.
 The membrane is in fluidic communication with an intersecting gap of the
 trench that crosses a first input waveguide and a first output waveguide.
 10 Displacing the membrane to a first position causes the gap to be filled with
 an index-matching liquid such that light from the first input waveguide is
 transmitted to the first output waveguide. Alternatively, displacing the
 membrane to a second position causes the gap to be filled with a gaseous
 bubble, resulting in a refractive index mismatch, such that the light from the
 first input waveguide is diverted at the gap. In another embodiment, there
 15 are two membranes utilized for manipulating optical signals.

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